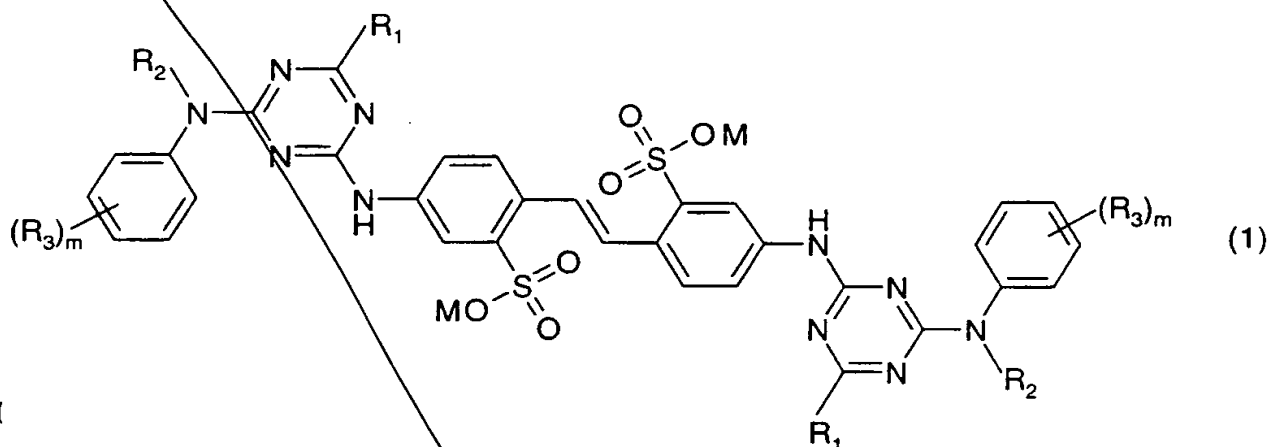


Claims

1. A compound having the formula:



wherein each

$R_1$  represents, independently, a linear  $C_1$ - $C_4$ -alkylene residue which is unsubstituted or substituted by hydroxy,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -hydroxy- or alkoxy-alkoxy, -OCOM, -OCOC $_1$ - $C_4$ -alkyl, or an amino acid residue from which a hydrogen atom on the amino group has been removed; each

$R_2$  represents, independently, a linear  $C_1$ - $C_4$ -alkylene residue which is unsubstituted or substituted by hydroxy,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -hydroxy- or alkoxy-alkoxy, -OCOM, -OCOC $_1$ - $C_4$ -alkyl, -CO $_2$ M, CO $_2$ C $_1$ - $C_4$ -alkyl SO $_3$ M or phenoxy which is unsubstituted or substituted by halogen,  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -alkoxy, -CO $_2$ M or -CO $_2$ C $_1$ - $C_4$ -alkyl, NH $_2$  or mono- or disubstituted amino; or phenyl which is unsubstituted or substituted by 1 to 3 SO $_3$ M, SO $_2$ NHC $_1$ - $C_4$ -alkyl, -SO $_2$ NH $_2$ , -CO $_2$ M, -CO $_2$ C $_1$ - $C_4$ -alkyl, -CONH $_2$ , -CONHC $_1$ - $C_4$ -alkyl, -NHCOC $_1$ - $C_4$ -alkyl or mono- or disubstituted amino groups; each

$R_3$  represents, independently, hydrogen,  $C_1$ - $C_4$ -alkyl, halogen, cyano, SO $_3$ M, -SO $_2$ NH $_2$ , SO $_2$ NHC $_1$ - $C_4$ -alkyl, -CO $_2$ M, -CO $_2$ C $_1$ - $C_4$ -alkyl, -CONH $_2$ , -CONHC $_1$ - $C_4$ -alkyl, or -NHCOC $_1$ - $C_4$ -alkyl;

M is hydrogen, an alkali metal atom, ammonium or a cation formed from an amine and m is an integer of 1 to 3.

2. A compound according to claim 1 in which both of the  $R_1$  groups, the  $R_2$  groups and the  $R_3$  groups are identical.

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B2  
3. A compound according to claim 2 in which each  $R_1$  is an amino acid residue and each has the formula  $-NH-CH(CO_2H)-R_4$  in which  $R_4$  is hydrogen or a group having the formula  $-CH(R_5)R_6$  in which  $R_5$  and  $R_6$ , independently, are hydrogen or  $C_1$ - $C_4$ -alkyl optionally substituted by one or two substituents selected from hydroxy, thio, methylthio, amino, carboxy, sulfo, phenyl, 4-hydroxyphenyl, 3,5-diiodo-4-hydroxyphenyl,  $\beta$ -indolyl,  $\beta$ -imidazolyl and  $NH=C(NH_2)NH-$ .

4. A compound according to claim 3 in which the amino acid from which the amino acid residues  $R_1$  are derived is glycine, alanine, sarcosine, serine, cysteine, phenylalanine, tyrosine (4-hydroxyphenylalanine), diiodotyrosine, tryptophan ( $\beta$ -indolylalanine), histidine (( $\beta$ -imidazolylalanine),  $\alpha$ -aminobutyric acid, methionine, valine ( $\alpha$ -aminoisovaleric acid), norvaline, leucine ( $\alpha$ -aminoisocaproic acid), isoleucine ( $\alpha$ -amino- $\beta$ -methylvaleric acid), norleucine ( $\alpha$ -amino-n-caproic acid), arginine, ornithine ( $\alpha,\delta$ -diaminvaleric acid), lysine ( $\alpha,\epsilon$ -diaminocaproic acid), aspartic acid (aminosuccinic acid), glutamic acid ( $\alpha$ -aminoglutaric acid), threonine, hydroxyglutamic acid or taurine, or a mixture or an optical isomer thereof.

5. A compound according to claim 4 in which the amino acid from which the amino acid residues  $R_1$  are derived is sarcosine, taurine, glutamic acid or aspartic acid.

Sub.  
A1  
6. A compound according to any of claims 1 to 5 in which the amino acid from which each amino acid residue  $R_1$  is derived is aspartic acid or iminodiacetic acid.

7. A compound according to claims 1 or 2 in which  $R_1$  is a linear  $C_1$ - $C_4$ -alkylene residue which is unsubstituted or substituted by hydroxy,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -hydroxy- or alkoxy-alkoxy,  $-OCOM$ ,  $-OCOC_1$ - $C_4$ -alkyl,  $M$  being as previously defined.

8. A compound according to claim 7 in which  $R_1$  is a linear  $C_1$ - $C_4$ -alkylene residue which is unsubstituted or substituted by hydroxy,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -hydroxy- or alkoxy-alkoxy.

9. A compound according to claim 8 in which  $R_1$  is a linear  $C_1$ - $C_4$ -alkylene residue

which is substituted by hydroxy or C<sub>1</sub>-C<sub>4</sub>-alkoxy.

10. A compound according to any one of claims 1 to 9 in which the group R<sub>2</sub> represents a linear C<sub>1</sub>-C<sub>4</sub>-alkylene residue which is unsubstituted or substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-hydroxy or alkoxyalkoxy, -OCOM, -OCOC<sub>1</sub>-C<sub>4</sub>-alkyl, -CO<sub>2</sub>M, -CO<sub>2</sub>C<sub>1</sub>-C<sub>4</sub>-alkyl, SO<sub>3</sub>M, phenoxy which is unsubstituted or substituted by halogen, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, -CO<sub>2</sub>M or -CO<sub>2</sub>C<sub>1</sub>-C<sub>4</sub>-alkyl, NH<sub>2</sub> or mono- or disubstituted amino.

11. A compound according to claim 10 in which the group R<sub>2</sub> represents a methylene, ethylene or propylene residue which is substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-hydroxy- or alkoxy-alkoxy, -OCOM, -OCOC<sub>1</sub>-C<sub>4</sub>-alkyl, -CO<sub>2</sub>M, -CO<sub>2</sub>C<sub>1</sub>-C<sub>4</sub>-alkyl, SO<sub>3</sub>M or di-C<sub>1</sub>-C<sub>4</sub>-alkylamino, whereby M is as defined in claim 1.

12. A compound according to claims 10 or 11 in which R<sub>2</sub> is hydroxyethyl, hydroxypropyl, ethoxyethyl, hydroxyethoxyethyl, methoxyethoxyethyl, an acetic or propionic acid residue or methyl or ethyl esters thereof, an ethyl or methyl acetate, dimethylaminoethyl or ethyl sulphonic acid or the sodium salt thereof.

13. A compound according to claim 12 in which R<sub>2</sub> is hydroxyethyl or a sodium acetate residue.

14. A compound according to claims 1 or 2 in which each R<sub>2</sub> is phenyl which is unsubstituted or substituted by 1 to 3 SO<sub>3</sub>M, SO<sub>2</sub>NHC<sub>1</sub>-C<sub>4</sub>-alkyl, -SO<sub>2</sub>NH<sub>2</sub>, -CO<sub>2</sub>M, -CO<sub>2</sub>C<sub>1</sub>-C<sub>4</sub>-alkyl, -CONH<sub>2</sub>, -CONHC<sub>1</sub>-C<sub>4</sub>-alkyl, -NHCOC<sub>1</sub>-C<sub>4</sub>-alkyl or mono- or disubstituted amino groups, wherein M is as defined in claim 1,

15. A compound according to claims 14 in which each R<sub>2</sub> is phenyl which is unsubstituted or substituted by one SO<sub>3</sub>M, -SO<sub>2</sub>NH<sub>2</sub> or -NHCOC<sub>1</sub>-C<sub>4</sub>-alkyl group.

16. A compound according to claims 14 or 15 in which each R<sub>2</sub> is phenyl.

17. A compound according to any one of the preceding claims in which R<sub>3</sub> represents hydrogen, C<sub>1</sub>-C<sub>4</sub>-alkyl, halogen, cyano, SO<sub>3</sub>M, -SO<sub>2</sub>NH<sub>2</sub>, SO<sub>2</sub>NHC<sub>1</sub>-C<sub>4</sub>-alkyl, -CO<sub>2</sub>M,

Amen.  
a<sup>2</sup>

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Sub  
BS

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a<sup>3</sup>

contd.  
a<sup>3</sup>

~~CO<sub>2</sub>C<sub>1</sub>-C<sub>4</sub>-alkyl, -CONH<sub>2</sub>, -CONHC<sub>1</sub>-C<sub>4</sub>-alkyl, or -NHCOC<sub>1</sub>-C<sub>4</sub>-alkyl, M being defined as in claim 1 and m is 1.~~

18. A compound according to claim 17 in which R<sub>3</sub> represents hydrogen.

Amén.  
a<sup>4</sup>

~~19. A compound according to any of the preceding claims in which M is hydrogen, Na, K, Ca, Mg, ammonium, mono-, di-, tri- or tetra-C<sub>1</sub>-C<sub>4</sub>alkylammonium, mono-, di- or tri-C<sub>1</sub>-C<sub>4</sub>-hydroxyalkylammonium or ammonium that is di- or tri-substituted with a mixture of C<sub>1</sub>-C<sub>4</sub>-alkyl and C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl groups.~~

20. A compound according to claim 19 in which each M is hydrogen or Na.

Amén.  
a<sup>5</sup>

~~21. A compound of formula 1 in which:~~

~~R<sub>1</sub> is an amino acid residue derived from aspartic acid or iminodiacetic acid,~~

~~R<sub>2</sub> is hydroxyethyl,~~

~~R<sub>3</sub> is hydrogen and~~

~~M is sodium.~~

22. A compound of formula 1 in which:

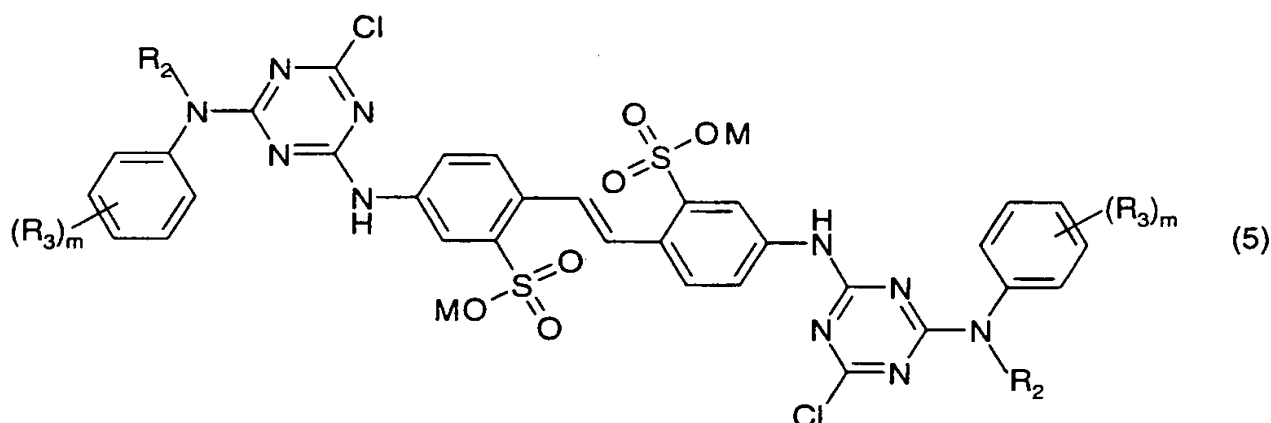
R<sub>1</sub> is a 2-methoxyethylamino residue,

R<sub>2</sub> is a sodium acetate residue,

R<sub>3</sub> is hydrogen and

M is sodium.

23. A compound of the formula:



in which R<sub>2</sub>, R<sub>3</sub>, M and m are as defined in claim 1.

*amen. 06*  
~~24. Use of the compound of formula (5) of claim 23 for the preparation of a compound of the formula (1).~~

25. A process for the preparation of a compound of formula (1) by reacting, under known reaction conditions, cyanuric chloride, successively, in any desired sequence, with each of 4,4'-diamino-2,2'-stilbene disulphonic acid, an amino compound capable of introducing a

group in which R<sub>2</sub>, R<sub>3</sub> and m have their previous significance, and

a compound capable of introducing a group R<sub>1</sub>, in which R<sub>1</sub> has its previous significance.

26. Use of the compounds of formula (1) as optical brightening agents for synthetic or natural organic materials.

*a*  
 27. Use of the compounds of formula (1) according to claim 26 as optical brightening agents for paper in pulp, size-press or coating applications.

28. Use of the compounds of formula (1) according to claim 26 as optical brightening agents for textile materials, especially cotton and polyamide materials as well as mixtures of the same and other synthetic fibres.

~~29. Use of the compounds of formula (1) according to claim 26 as optical brightening agents in detergent compositions.~~ *a*

~~30. Use of the compound of formula (1) for removing stain in photographic materials~~

*Sub*  
*B7*  
31. A composition for whitening synthetic or natural organic materials or for removing stain from photographic materials, which contains water, a fluorescent whitening agent according to claim 1 and, optionally, auxiliaries.

*Amend.*  
*A7*  
*Add*  
*A8*  
32. Brightener compositions according to claim 31 containing water and, in each case based on the weight of the formulation, from 3 to 25% by weight, preferably from 5 to 15% by weight of the above defined fluorescent whitening agent mixture and also 0 to 60%, preferably 5 to 50% by weight, of auxiliaries.

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